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FERC'S STANDARD MARKET DESIGN PROPOSAL: BACKGROUND AND DATA IMPLICATIONS

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**The views presented here do not necessarily reflect
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OVERVIEW OF PRESENTATION

- Background to Market Design
- Structure of SMD Proposal
- Data Implications
 - Public data
 - Potential confidential data needs for market monitoring and market power mitigation



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THE MARKET DESIGN DEBATE, MID '90s TO PRESENT

■ Organizational Issues:

- Decentralized vs. Centralized Markets
 - Role of ISO (Min ISO vs. Max ISO)
 - Integrated PX/ISO vs. Separate PX and ISO

■ Property Rights:

- Physical vs. Financial Transmission Rights
- Point-to-Point Rights vs. Flow-based Rights

■ Pricing Issues in Transmission:

- (Fixed) Zonal vs. Locational Marginal Pricing (LMP)



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THE MARKET DESIGN DEBATE, MID '90s TO PRESENT (cont.)

- Pricing Issues in Energy
 - Unit commitment vs. one-part bids
 - Uniform clearing price vs. pay-as-bid

- Pricing Issues in Ancillary Services
 - Sequential vs. simultaneous clearing
 - Availability bids for spinning reserves
 - Demand curves for reserves



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WHY IS SMD NEEDED?

- Remedy Discrimination – Ensure Independence
- Lower Customer Costs through Regional Trade
- Manage Congestion and Provide for Balancing
- Minimize “Market Seams” and “Rate Pancaking”
- Avoid Market Manipulation
- Promote Investment in Necessary Infrastructure
- Basis for Effective State & Federal Regulation for what are now Regional Electricity Markets



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SMD PROPOSAL BASED ON BEST PRACTICES

Basic framework adopted by SMD NOPR similar to

- ✓ PJM
- ✓ New York
- ✓ New England re-design proposals
- ✓ proposed MISO design
- ✓ California MD02 proposal
- ✓ some elements in RTO West proposal



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MAJOR ELEMENTS

- Independent Transmission Provider (ITP)
- New Transmission Tariff
- Transmission Pricing Reform
- Organized Spot Markets
- Market Power Mitigation
- Market Monitoring
- Regional Resource Adequacy
- Regional Transmission Planning, ATC, OASIS



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INDEPENDENT TRANSMISSION PROVIDER

- Operates Transmission Facilities
- Administers Transmission Tariff
- Administers Organized Spot Markets
- Facilitates Transmission Planning on a Regional Basis
- Same Definition of Independence as in Order No. 2000 -- could be an RTO



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NEW TRANSMISSION TARIFF

- All transmission customers subject to the same terms and conditions of service
- Network Access Service
 - Universal access to the transmission grid
 - No more indiscriminate TLRs
 - Tradable Congestion Revenue Rights
- Transition:
 - **Customers under OATT** – Network Access Service
 - **Bundled retail service** – LSE takes Network Access Service to serve these customers
 - **Pre-Order No. 888 contracts** – May convert; or LSE takes Network Access Service on their behalf



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TRANSMISSION PRICING

- **Embedded Costs**
 - access charge paid by load
 - license plate to address cost shifts
- **Congestion Management through LMP**
- **Pricing of Transmission Expansions**
 - With ITP: consider participant funding
 - Without ITP: presumption will be to roll-in
- **No access charges for transactions across ITP borders (cost allocation remedy for cost shifts)**



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ITP SPOT MARKETS

- Voluntary Day-Ahead, Real Time, and Ancillary Services Markets
- Supplement Long-Term Bilateral Contracts
- Implements LMP and provides balancing
- Ensure physical feasibility
- Settle Congestion Revenue Rights



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DAY-AHEAD ENERGY MARKET

- Types of transactions: self-schedule, bilateral schedule or bid into spot market; no requirement for balanced schedules; supply and demand
- Bid protocol: three-part financial bid (start-up, no load and incremental energy) with physical parameters (e.g., low and high operating levels, minimum run times, ramp rates); hourly bid.
- Price determination and settlement: locational marginal prices (LMP) that reflect congestion and losses



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DAY AHEAD RELIABILITY COMMITMENT

- ITP evaluates bid-in day-ahead load
- Commits additional generation (start-up and no-load) to meet forecast load
- Charges costs of additional generation to load that shows up in real-time



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REAL-TIME ENERGY MARKETS

- Types of transactions: deviations from schedules up to some period prior to dispatch; bids into real-time market
- Bid protocol: start-up and incremental energy with physical parameters; hourly bid. Periodic unit commitment (e.g. 3 hour look-ahead)
- Price determination and settlement: ex post locational marginal prices (LMP) that reflect congestion and losses



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CONGESTION REVENUE RIGHTS

- LMP Congestion charges -- means of efficiently allocating scarce transmission capacity
- CRRs -- Financial right that entitles holder to congestion revenue (protects customers from congestion costs)
- Initial allocation process will be difficult
 - Rights of existing customers should be preserved
 - How do we accommodate unique regional needs?



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- Similar to rules for point-to-point obligation rights (e.g., PJM, New York); also point-to-point options.
- Offer *user-specified* flow-based rights on all transmission elements (may need some restrictions); i.e., users decide which are commercially significant
- Settle flow-based rights at locational flowgate prices; no subsidy
- Hub-to-hub point-to-point rights and portfolios of commercially significant flowgate rights should be similar (imperfect) hedges to construct



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MARKET POWER MITIGATION

- Three Required Measures
 - Must offer obligation for localized market power
 - Safety-net bid cap - e.g., \$1,000 per MWh
 - Resource adequacy requirement for load
- Voluntary Measure – market monitor may request for non-competitive conditions
 - Could limit bids if bids are high due to withholding and not scarcity
 - Need for measure determined on a regional basis



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MARKET MONITORING

- Proposal sets out the framework
- Independent market monitoring unit
 - Evaluates state of the markets
 - Identifies need for changes in market rules
 - Identifies load pockets and areas where infrastructure is needed for competition
- Sends reports to FERC, ITP Board and Regional State Advisory Committee
- Flexibility to adapt measures to regional market conditions



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REGIONAL RESOURCE ADEQUACY

- Forward-looking, regional plan to ensure adequate resources are in place when needed
- Addresses regional “free rider” problem
- Region determines the planning horizon (e.g., 3 years), the reserve margin (above a 12% minimum (placeholder)), and allocation to LSEs
- LSE that does not meet requirement is subject to a penalty price for spot market purchases and is curtailed first (if needed) during a shortage



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REGIONAL ATC, OASIS, AND TRANSMISSION PLANNING

- ATC determined and offered regionally
- New regional transmission capacity planning to begin within six months
- “Ground-up” process with regional coordination to address loop flows
- ITPs would act as clearinghouse and evaluate alternative proposals
- Four planning regions



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PUBLIC MARKET DATA

- SMD NOPR mentions:
 - Day-Ahead and Real-Time LMPs and Flowgate Marginal Prices
 - Clearing prices for Regulation and Operating Reserves
- Typical ISO/RTOs also post:
 - Hourly load data
 - Uplift costs
 - Historical bid data (anonymous)
 - Other hourly and aggregate data on market and system conditions



Federal Energy Regulatory Commission **DATA COLLECTED BY MARKET MONITORING UNIT**

- MMU shall collect all data necessary to identify inefficiencies in market and exercise of market power
- Market participants must comply with MMU requests
- Data specific to market participant shall be confidential



Federal Energy Regulatory Commission **DATA COLLECTED BY MARKET MONITORING UNIT (cont.)**

- All bid data
- Generator specific data
 - start-up, no load, and shut down costs
 - environmental restrictions
 - fuel costs, maintenance costs
 - heat rates, ramp rates, HOL, LOL, and min run
- Other relevant data on generation and transmission: generation capacity market shares, outages, expansion plans and interconnection queues



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OTHER STANDARDIZATION INITIATIVES

- NERC: standardization of reliability procedures
- NAESB: standardization of business protocols and communications
- NERC-NAESB joint interface committee



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REGIONAL FLEXIBILITY

- Regional variation may be necessary for:
 - Term, type and allocation of CRRs
 - Transmission pricing, including expansions
 - Calculation of ATC
 - Market monitoring and market power mitigation
 - Resource adequacy
 - Rules for locational marginal pricing
 - Procurement of non-synchronous reserves
 - Action to preserve system reliability



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POST-NOPR PROCESS

- Additional Outreach Sessions
- Proposed Final Rule Implementation:
 - September 30, 2003 → Bundled Retail Under Tariff
 - December 1, 2003 → SMD Compliance Filings
 - 1 Year after Rule → Regional Planning
 - January 31, 2004 → Security Standards
 - September 30, 2004 → SMD in effect



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CONCLUSIONS

- SMD NOPR is a proposal
 - Need for further discussion
 - Details to make the proposal work
 - Alternatives to NOPR proposals are welcome
- Regional flexibility
 - Differences due to resource mix
 - Issues related to retail access
 - Guidance in RTO orders